

(Left Hand)

BA

Work Order ID 67052



Page 1

Friday, March 04, 2011 11:47:36 AM

Item ID: D205-634-041

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 3/4/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 3/23/2011 Req'd Qty: 1.00

Customer:

Reference: CUSTOM

Run Start



Approvals: Process Plan: *[Signature]*

Date: 11-03-4

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D2580

Rev.D DEO-D1

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy D205-634 bluefile & type labels per PPP D205-634-041 CHG003

002
for all CHG 002
8/15/14

(need two labels on Box)

D412-673-011 CHG 00

11/11-05-4

110

0.00



BENDING MACHINE - SKIDTUBES

CNC Bend I

Memo

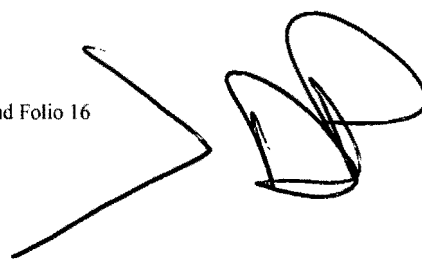
0.00

CNC Delta 100 Bender

1-Bend as per program D2580.C on CNC Bender and Folio 16

2-Cut tubes as per Dwg. D2580

3- scribe batch# in aft end of tube



11-3-31

B67052

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

120

0.00



Skidtubes

Memo

0.00

Skidtubes

1- Deburr ends and remove bending marks

2- Prepare tube for swaging as per QSI 002



11-4-1

130

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

1 8 Ben/04/01

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

140

0.00



Skidtubes

Skidtubes

Memo

0.00

1-Weld step D2576 as per Dwg. D2580 and QSI 004
A/R□□□ Aluminum Rod

M116577

2-Grind welds on step as per Dwg D2580

BE 11/04/20

3-Insert D4202-1 spacer, swage as per QSI002 and trim/ grind flush per QSI002
and dwg. Hold x-bolt with DT9701 Use tube expander 1/2 x 17G to start
expansion and finish with 1/2 x 18G to achieve dwg dimension.

WELDED

A/R M116577

BE 11/04/20

4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64",
adjust stopper not to hit web. Debur

BE 11/04/13

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Debur

BE 11/04/13

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Debur

BE 11/04/20

150

QC10- Inspect visual per QSI004- ground welds

0.00



QC

Quality Control

Memo

0.00

S 11/04/26

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Cust Item ID:

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Customer:

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Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160 QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00							
170 HandFinish Hand Finishing	Pressure Wash per QSI005 4.3 Memo Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch and leave fwd cap out of solution.	0.00 0.00				1	BR	11-4-26.	
180 Powdercoat Powder Coating	White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum M116964. Memo START TIME: 10:10 OVEN TEMPERATURE: 350° FINISH TIME: 10:40.	0.00 0.00				1	BR	11-4-27.	

W/O:		WORK ORDER CHANGES					
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Required Date: 3/23/2011 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

190

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

1 φ 22 11/04/25

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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200

0.00



HandFinish

0.00

Hand Finishing

Memo

- ✓ 1-Install inserts & wearplates & Gaskets as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates
A/R ☐ ☐ ☐ Sikaflex-291 ☐ 1116945
Sikaflex expire date: 12/01
- ✓ 2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580
- ✓ 3-Inspect for foreign object per QSI 024
- 4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive
A/R ☐ ☐ ☐ Sikaflex-291 ☐ 1116945
Sikaflex expire date: 12/01
- ✓ 5-Wing Walk as per Dwg D2580 and QSI 005 4.4
Batch: 1117315

1 of 22 4/05/02

W/O:		WORK ORDER CHANGES					
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Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

210



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

11 05 02 ①

220



Packaging

Packaging

Packaging

0.00

Memo

0.00

Identify and pack for shipping as per PPPD205-634-041

Location: _____

PPP Rev: _____

used on w/o

D205-634-041

B

11/5/4 ①

230



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

11/5/4 ①

MF 11-05-04

W/O: 67052		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	
11/05/03	220	Holes were Drilled in this step skid tube for electric Step. Work Done on customer order per ITP D412-673 D412-673-611 B3 34704 CHC7402	AF	11/05/03		11.05.03 PS/CMR	11/05/04	

Part No: D205-634-041 PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Picklist Print

Friday, March 04, 2011 11:47:43 AM

Page 1

Work Order ID: 67052

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube



Start Date: 3/4/2011

Required Date: 3/23/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30
KJ IPP Rev P 10.02.19
per PAR09-043 EC verified by:DD
IPP Rev. O 06.02.28 Added paperwork EC
IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM IPP Rev:Q
10.12.01 as per chg003 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D4202-1 		Manufactured	No			140	Each	240.0000	20	20			
Spacer D2579													

Location	Loc Qty	Loc Code
LG	240	
65529	26	
66121	214	

D2580-1 		Manufactured	No			110	Each	11.0000	1	1			
205 Skidtube bent detail													

Location	Loc Qty	Loc Code
LG B67432	11	
59856	1	
65509	5	
65510	4	
65511	1	

D2576-3 		Manufactured	No			140	Each	40.0000	1	1			
Step (maching detail)													

Location	Loc Qty	Loc Code
LG	40	
52215	40	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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NOTE: Date & initial all entries

Picklist Print

Friday, March 04, 2011 11:47:43 AM

Work Order ID: 67052

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 3/4/2011

Required Date: 3/23/2011

Start Qty: 1.00

Required Qty: 1.00

D2855

Manufactured No

200 Each

88.0000 1 1



Cap



11/05/02

Location

Loc Qty

Loc Code

FP6

1

56613

1

fp7

15

65519

15

ST024

72

50513

1

50770

28

51539

2

53791

6

65569

35

AN3-5A

Purchased

No

200 Each

705.0000 2 2



Bolt



11/05/02

Location

Loc Qty

Loc Code

ST350

705

115016

39

115371

500

116632

166

AN960JD10L

NAS1149D0332J

Purchased

No

200 Each

4.0000 2 2



Washer



11/05/02

Location

Loc Qty

Loc Code

ST335

4

11912

4

1117291

12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Friday, March 04, 2011 11:47:44 AM

Work Order ID: 67052

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 3/4/2011

Required Date: 3/23/2011

Start Qty: 1.00

Required Qty: 1.00

ALS7-1032-130

Purchased

No

200

Each

1,604.000

50

50



Insert



HL 1105102

Location

Loc Qty

Loc Code

FP

21

1117331

X50

115079

21

ST282

1583

111529

32

113238

17

115502

500

115581

34

116800

1000

AN3C4A

Purchased

No

200

Each

2,476.000

50

50



BOLT



HL 1105102

Location

Loc Qty

Loc Code

ST350

2476

115300

25

116075

337

116704

414

116924

1200

X50

117010

500

AN960C10L

NAS1149C0332

Purchased

No

200

Each

61.0000

50

50



washer



HL 1105102

Location

Loc Qty

Loc Code

ST245

61

107534

59

108246

2

1117291

X50

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Parent Item Name: Replacement Skidtube

Start Date: 3/4/2011



Required Date: 3/23/2011

Start Qty: 1.00



Required Qty: 1.00

D3566-13 Manufactured No 200 Each 61.0000 1 1
  M u l o s / o z
 Gasket

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP011	36	
66550	36	
FP014	25	
64070	8	
66137	17	

D3566-5 Manufactured No 200 Each 40.0000 1 1
  M u l o s / o z
 Gasket

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP015	40	
63574	1	
65528	13	
66146	6	
66552	20	

D3566-1 Manufactured No 200 Each 62.0000 2 2
  M u l o s / o z
 Gasket

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP	20	
66548	20	
FP011	19	
65525	19	
FP015	23	
57715	1	
66040	20	
66129	2	

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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Start Date: 3/4/2011



Required Date: 3/23/2011

Start Qty: 1.00



Required Qty: 1.00

D3564-11 Manufactured No 200 Each 19.0000 1 1
  yl 4/05/02
Wearshoe

Location	Loc Qty	Loc Code
FP019	19	1358350
65159	5	
66554	14	

D3564-13 Manufactured No 200 Each 48.0000 1 1
  yl 4/05/02
Wearshoe

Location	Loc Qty	Loc Code
FP16	25	
65522	7	
66549	18	
FP17	23	
59660	1	
66136	22	

D3564-9 Manufactured No 200 Each 20.0000 1 1
  yl 4/05/02
Wearshoe

Location	Loc Qty	Loc Code
FP	1	
55334	1	
FP019	18	
66153	18	
FP19	1	1367590
62238	1	

W/O:		WORK ORDER CHANGES					
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Parent Item Name: Replacement Skidtube

Start Date: 3/4/2011

Required Date: 3/23/2011

Start Qty: 1.00

Required Qty: 1.00

D3564-5

Manufactured

No

200

Each

44.0000

1

1



Wearshoe



HL 4405102

Location

Loc Qty

Loc Code

FG

1

34806

1

FP19

24

57525

1

58709

1

66551

22

FP-19

19

63575

1

65523

3

66148

15

11

D2594-3

Manufactured

No

200

Each

967.0000

16

16



O-Ring, 205 Skidtube



HL 4405102

Location

Loc Qty

Loc Code

FP

543

55546

19

58191

12

59358

12

65518

500

fpa

424

61762

424

116

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Parent Item Name: Replacement Skidtube

Start Date: 3/4/2011

Required Date: 3/23/2011

Start Qty: 1.00

Required Qty: 1.00

D2594-1

Manufactured No

200

Each

696.0000

16

16



Plug, 205 Skidtube



11/05/02

Location

Loc Qty

Loc Code

FP

483

B66932

x14

42807

112

55002

71

66122

300

x2

FP14

213

58434

15

65512

133

65980

65

W/O:		WORK ORDER CHANGES					
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN <i>[Signature]</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D2580	REV. D SHEET 1 OF 3
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY	SCALE NTS
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

RELEASED
07.06.28 *[Signature]*

DEO ATTACHED

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 67052

pl11-03-4

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL $\varnothing 0.297$ HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:
SEE NOTES ON
PAGE 2 FOR D2580-041 AND
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

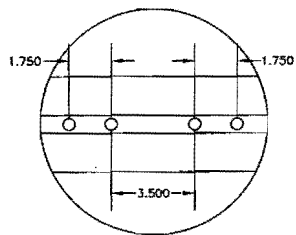
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

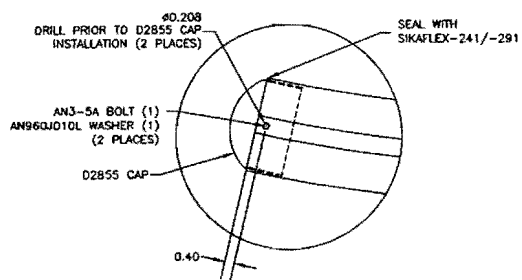
SCALE 5:24



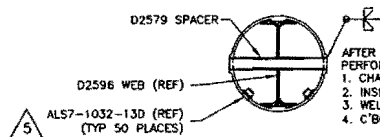
RELEASED
07-06-28

DEO ATTACHED

DETAIL C
SCALE 5:24



SECTION D-D
SCALE 5:24



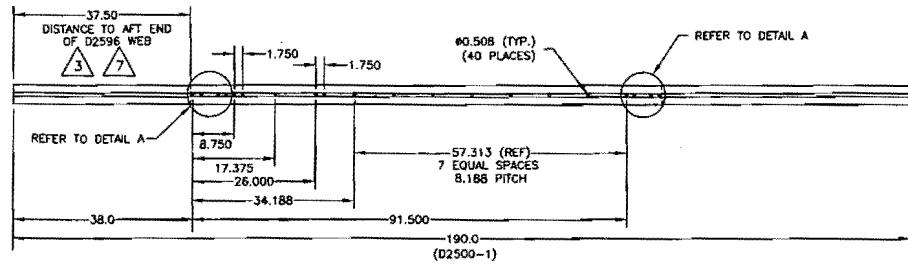
**AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:**

- 1. CHAMFER HOLE 0.050 X 45°**
- 2. INSERT D2579 SPACER (20 PLACES)**
- 3. WELD INTO PLACE AND GRIND FLUSH**
- 4. C-BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP**

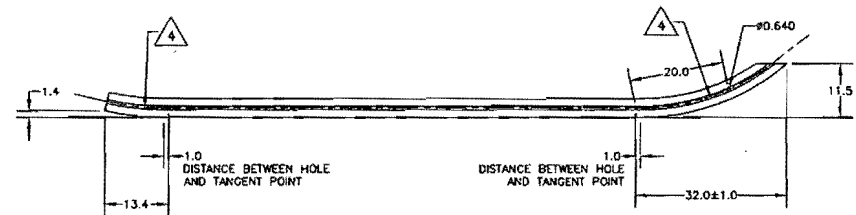
D2580-041 NOTES

- i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB POWDER COAT ASSEMBLY GLOSS WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3 BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

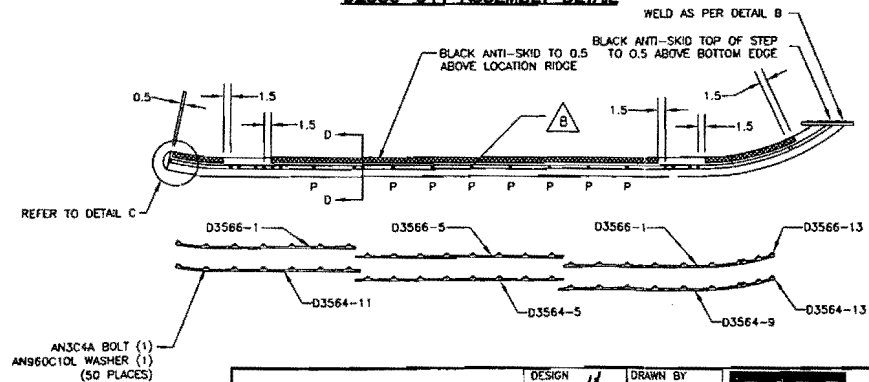
D2580-1 DRILLING DETAIL



D2580-1 BENDING AND CUTTING DETAIL



D2580-041 ASSEMBLY DETAIL



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DESIGN	11
--------	----

5

CHECKED *ml*

Abstract

DATE _____

07.02.27

DRAWN BY

94

APPROVED

7

DART

DART AEROSPACE LTD.
HAWKESBURY, ONTARIO, CANADA

DRAWING NO.

D2580

[illegible]

205 SKI

REV.

SHEET 2 OF

SCAL

ASSEMBLY 1:2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

RELEASED
07-06-25

Diagram illustrating the grinding locations for the D2576-3 step. The diagram shows a cross-section of the step with the following labels:

- GRIND FLUSH (4 PLACES)
- GRIND FLUSH
- D2576-3 STEP
- LOCATION RIDGE ON UNDERSIDE OF D2576
- $\sqrt{14}$

DETAIL G
SCALE 5:24

0.208

DRILL PRIOR TO D2855 CAP
INSTALLATION (2 PLACES)

SEAL WITH
SIKAFLEX--241/-291

AN3-5A BOLT (1)
AN980JD10L WASHER (1)
(2 PLACES)

D2855 CAP

SEE NOTE ii)

0.40

D2579 SPACER

D2596 WEB (REF)

ALS7-1032-130 (REF)
(TYP 50 PLACES)

AFTER PERFO

1. CHA
2. INS
3. WEI
4. C'B

i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB
POWDER COAT ENTIRE ASSEMBLY GREEN (REF. 4.3.5.8) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

ii) IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE
WITH THE SPACER AT THIS LOCATION

[illegible]

(MAKE FROM D2580-1 DRILLING DETAIL)

51.340

39.580

5.985

5.338 (REF)

3.630 (REF)

5.915

20.0

0.640

1.4

1.0

1.0

1.34

32.0±1.0

0.508 (8 PLACES)

DISTANCE BETWEEN HOLE AND TANGENT POINT

DISTANCE BETWEEN HOLE AND TANGENT POINT

11.0

[illegible]

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DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY			SCALE 1:24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DRAWING NO. D2580	TITLE 205 SKIDTUBE ASSEMBLY	REV. D	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO. D2580-D-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>UP</i>	CHECKED <i>1</i>	MFG. APPR. <i>E</i>	APPROVED <i>MP</i>	DE APPR. <i>MP</i>		
DATE 10.09.22	DATE 10.11.04	DATE 10.11.04	DATE 10/11/04	DATE 10.11.04		

PURPOSE:

CHANGE ALL WELDED CROSSBOLT SPACERS TO SWAGED SPACERS

CHANGE:

PARTS LIST IS AMENDED AS FOLLOWS:

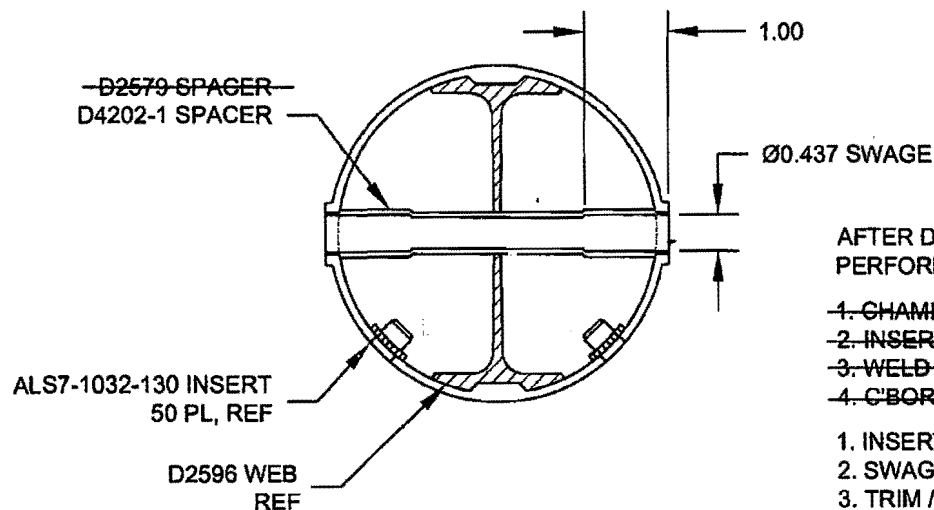
WAS

QTY	QTY	PART NUMBER	DESCRIPTION
-041	-045		
20	24	D2579	CROSS BOLT SPACER

IS

20	24	D4202-1	SPACER
----	----	---------	--------

SECTION D-D & SECTION H-H ARE AMENDED AS FOLLOWS:



RELEASED
2010-11-18
MP

AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:

1. CHAMFER HOLE 0.050 X 45°
2. INSERT D2579 SPACER (20 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C-BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP

1. INSERT D4202-1 SPACER, 20 PL (-041) OR 24 PL (-045)
2. SWAGE TO Ø0.437 X 1.00 DEEP PER QSI 002
3. TRIM / GRIND FLUSH PER QSI 002

SECTION D-D
NOT TO SCALE

SECTION H-H
NOT TO SCALE

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Linda Lacelle

From: dshepherd@dartaero.com
Sent: April 18, 2011 11:36 AM
To: Linda Lacelle; Mike Petsche
Cc: Bill Beckett; 'Chris Provencal'; 'Eric Charbonneau'
Subject: Re: Alum. Solution Anneal - swaging

Makes sense to me ... We don't want to get caught short ... Make sure that if we do this, they are identified with the old CHG number.

David

Sent from my BlackBerry device on the Rogers Wireless Network

From: "Linda Lacelle" <llacelle@dartaero.com>
Date: Mon, 18 Apr 2011 11:21:10 -0400
To: 'Mike Petsche' <mpetsche@dartaero.com>; <dshepherd@dartaero.com>
Cc: 'Bill Beckett' <bbeckett@dartaero.com>; 'Chris Provencal' <cprovencal@dartaero.com>; 'Eric Charbonneau' <echarbonneau@dartaero.com>
Subject: RE: Alum. Solution Anneal - swaging

I am ready to weld some ^{up}, I don't want to get into trouble with L/T's on these, any objections??
LL

From: Mike Petsche [mailto:mpetsche@dartaero.com]
Sent: April 18, 2011 10:42 AM
To: 'Linda Lacelle'; dshepherd@dartaero.com
Cc: 'Bill Beckett'; 'Chris Provencal'; 'Eric Charbonneau'
Subject: RE: Alum. Solution Anneal - swaging

Well I'm not sure what to say.

CHG ⁰⁰⁷ ~~007~~

D2579

It is my understanding that the swaging will still make sense even with the extra hoops we need to jump through.

If there is still uncertainty on the delivery of the material, we CAN still weld them if we need to.

And while this might be less than "world class", couldn't we take some of our tubing that we have in stock and zap it with the welder to knock down the temper a little? Ground clamp on one end, torch on the other.....BZZZZZZT.

(I'm only sort of joking...because I bet it would work)

From: Linda Lacelle [mailto:llacelle@dartaero.com]
Sent: April 18, 2011 9:44 AM
To: dshepherd@dartaero.com; 'Mike Petsche'
Cc: Bill Beckett; Chris Provencal; Eric Charbonneau
Subject: RE: Alum. Solution Anneal - swaging
Importance: High

So any thoughts about going fwd for now with 205's? We are down to 6, and I don't want to run out as we have orders for these for early May.

LL

From: Linda Lacelle [mailto:llacelle@dartaero.com]

Sent: April 12, 2011 8:11 AM

To: dshepherd@dartaero.com; 'Mike Petsche' (mpetsche@dartaero.com)

Cc: Bill Beckett (bbeckett@dartaero.com); Chris Provencal (cprovencal@dartaero.com); Eric Charbonneau (echarbonneau@dartaero.com)

Subject: FW: Alum. Solution Anneal - swaging

So if we send them 400 pcs of the 6061T6 tube, they can temper it to T4 for a cost of 1850.00...

LL

From: John Spencer [mailto:johns@metcor.biz]

Sent: April 12, 2011 8:04 AM

To: llacelle@dartaero.com

Subject: Alum. Solution Anneal

Linda,

Metcor could process the tubes within a few days after receiving.

Price for the lot is \$1850 including conductivity test.

Would prefer 8 inch cut to length, if not we could manage 4 " lengths .

Please let me know and contact me on my cell.

Regards,

John Spencer

Metcor Inc.

Nadcap Certified

johns@metcor.biz

514-386-1620

NO. 249

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliott
Job number: 67531
Part number: D205 634 041
Description: 205
Welding Process: Tig ☒ Mig ☐
Base material: Aluminum
Current: AC ☒ DC ☐

TEST REQUIREMENTS AND RESULTS

Visual: pass ☒ fail ☐
Penetration: pass ☒ fail ☐

UNACCEPTABLE

Cracks: pass ☒ fail ☐
Undercut: pass ☒ fail ☐
Pin holes: pass ☒ fail ☐
Overlap (cold lap): pass ☒ fail ☐
Porosity (surface): pass ☒ fail ☐
Coloration: pass ☒ fail ☐

Qualifier Rat Ferris Date of Test Coupon 11.04.25

Welder Barclay Elliott Date of Test Coupon 11.04.25

The above named individual is qualified in accordance with AWS D17.1.2001 to weld

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D205-634-041 PAR #: _____ Fault Category: Production NCR: Yes No DQA: 11 Date: 11.05.11
 Resolution: Re work Disposition: Re work QA: N/C Closed: 11/05/12

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
11/05/03	3	Drilled pilot holes for Electric step in cush wrong location Pg. 2.6 had a variation		CARRY OUT INSTRUCTIONS PER DAVID HERNIMBERG'S EMAIL DATED MAY 03, 2011 9:56 AM. FILL HOLES WITH WELD (2) GRIND FLUSH AIR → M117456	11/05/03	11/05/04		11/05/04
11.05.03	3	SAND Paint in Affected Area (2 pls)	11/05/03	Re Alouin + Touch-up Powder coat in 2 places	11-05-03	11/05/04	11/05/03	11/05/04

NOTE: Date & initial all entries

Dan Stow

From: David Shepherd <dshepherd@dartaero.com>
Sent: Tuesday, May 03, 2011 9:56 AM
To: 'Dan Stow'
Cc: 'L Lacelle'; 'Marc Bellavance'; 'Mike Petsche'; 'Eric Downing'; 'Bill Beckett'
Subject: RE: Electric Step attachment holes incorrectly drilled

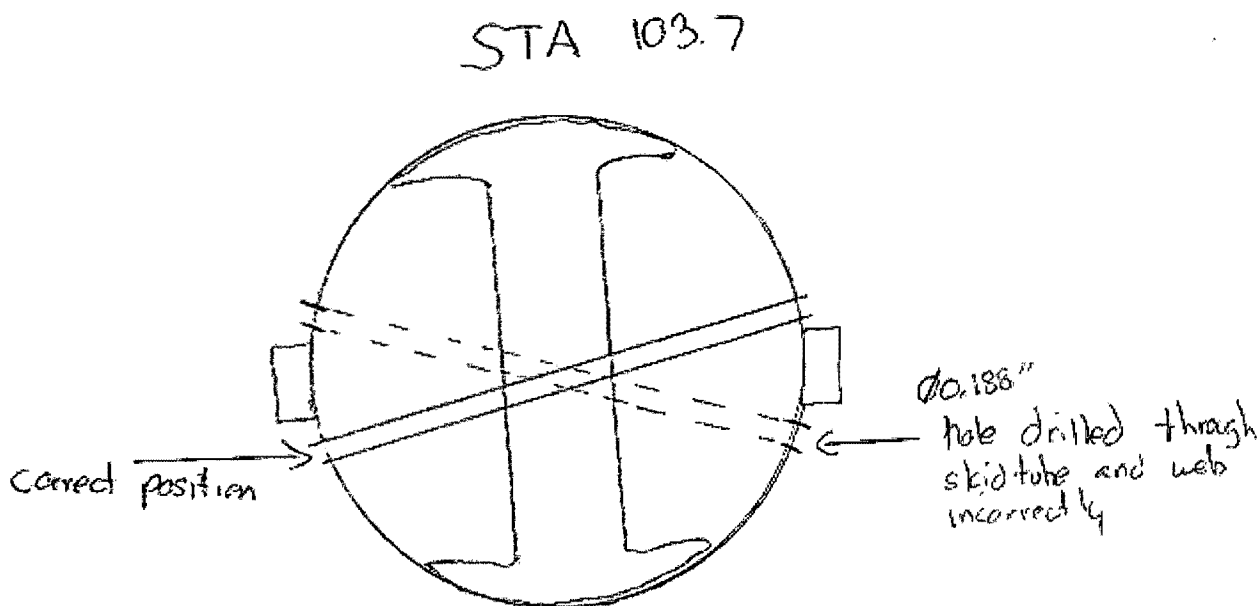
Structurally, this isn't an issue ... **HOWEVER**, this will be very visible to the customer (Air Methods), so I don't think we should do this **without** the customer's permission. My only suggestion would be to weld the pilot holes closed (if they haven't been opened to full size) and touch up paint.

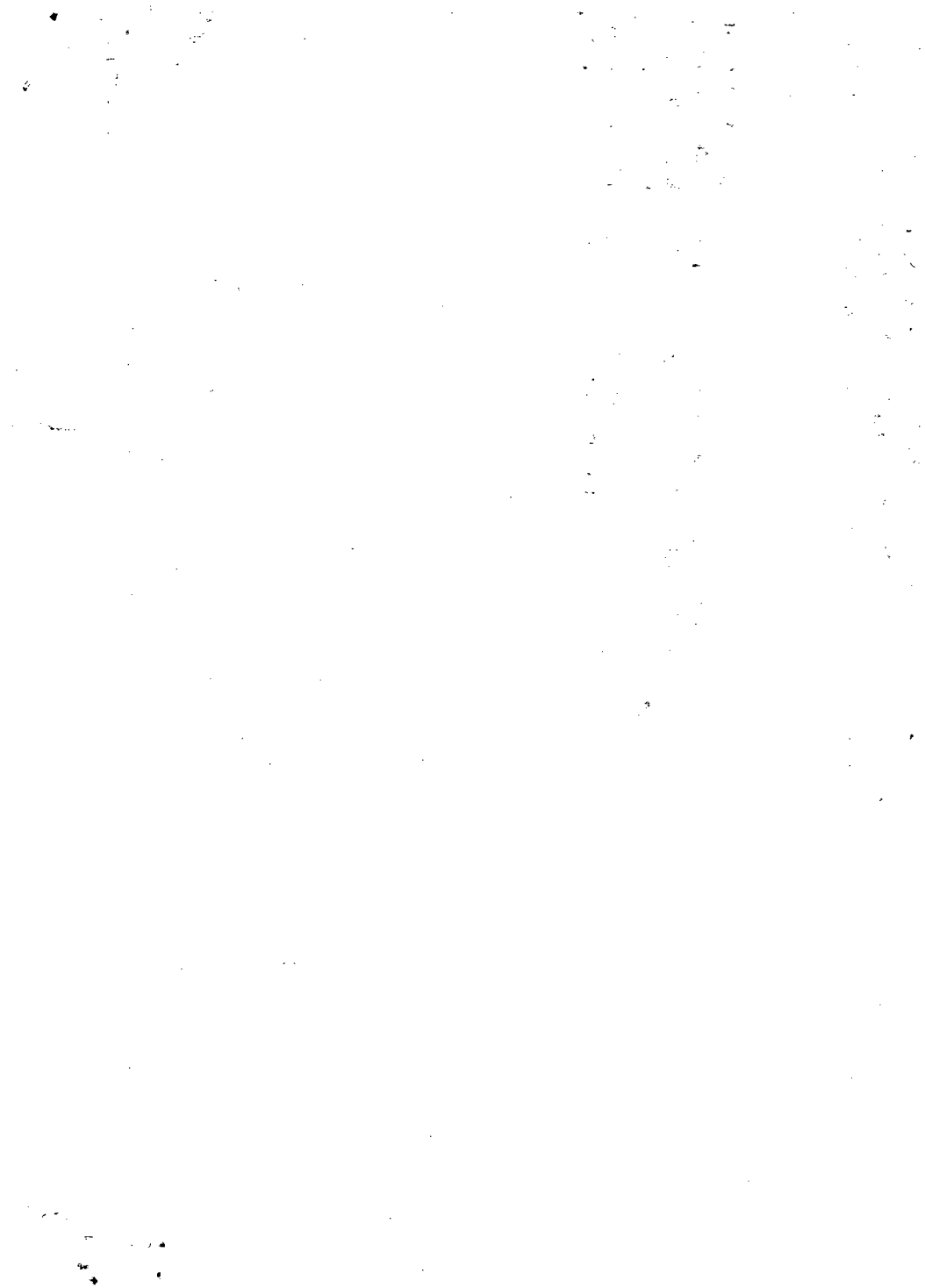
David

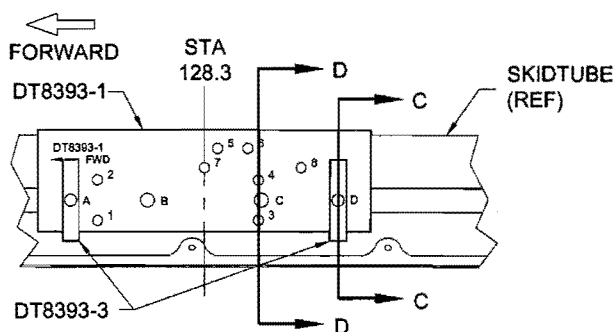
From: Dan Stow [mailto:dstow@dartaero.com]
Sent: Tuesday, May 03, 2011 6:24 AM
To: David Shepherd
Cc: L Lacelle; Marc Bellavance; 'Mike Petsche'; Eric Downing
Subject: Electric Step attachment holes incorrectly drilled
Importance: High

Hi David,

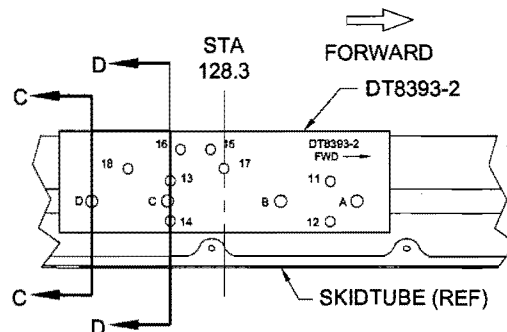
While Russ was drilling the Bell Electric Step holes per a customer's request; he drilled through the skidtube and web at the wrong location. Is it acceptable to fill the two incorrectly drilled holes with ALS7-1032-130 rivnuts, AN960C10L washers and MS27039C1-08 screws and then drill through the skidtube/web correctly?



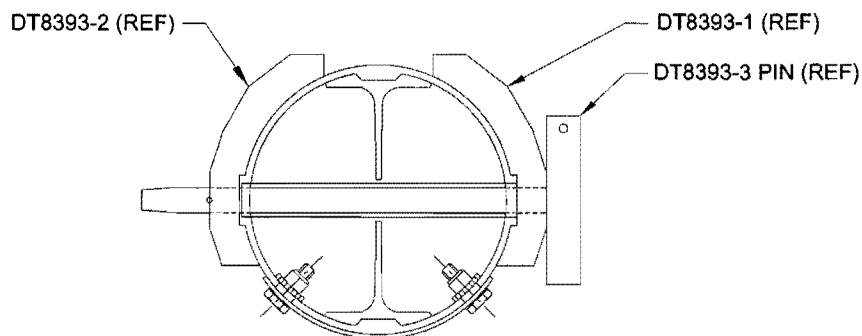




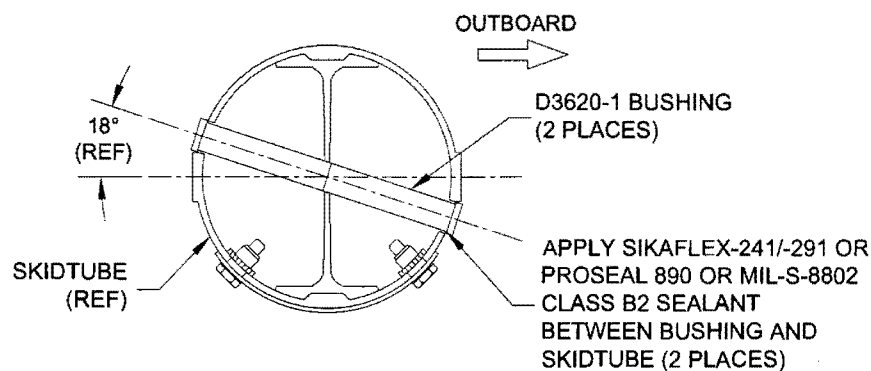
View A-A – Typical DT8393-1 Position
(See **Figure 4.1**; Tool Alignment at STA 128.3
Shown, Other STA Positions are Similar)



View B-B – Typical DT8393-2 Position
(See **Figure 4.1**; Tool Alignment at STA 128.3
Shown, Other STA Positions are Similar)

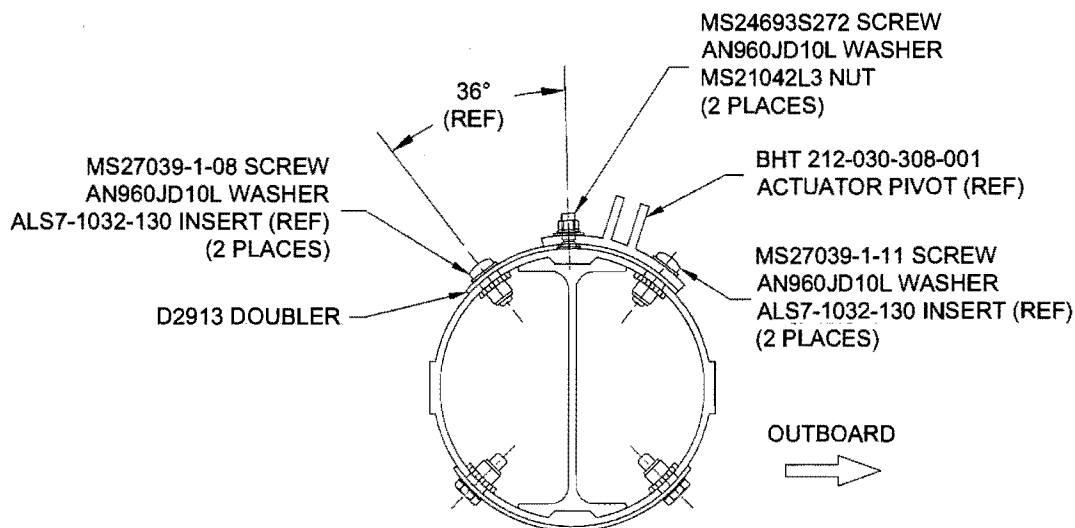


Section C-C – Typical DT8393-3 Pin Position
(See **View A-A** and **B-B**)



Section D-D – Bushing Installation
(See **View A-A** and **B-B**)

- 4.2.2 a) Install the D2913 Doubler onto the BHT 212-030-308-001 actuator pivot using MS24693 screws as shown in **Section E-E**.
- b) Install the assembly onto the skidtube using MS27039 screws as shown in **Section E-E**. Fasteners should be installed with Sikaflex-241/291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant on final installation.

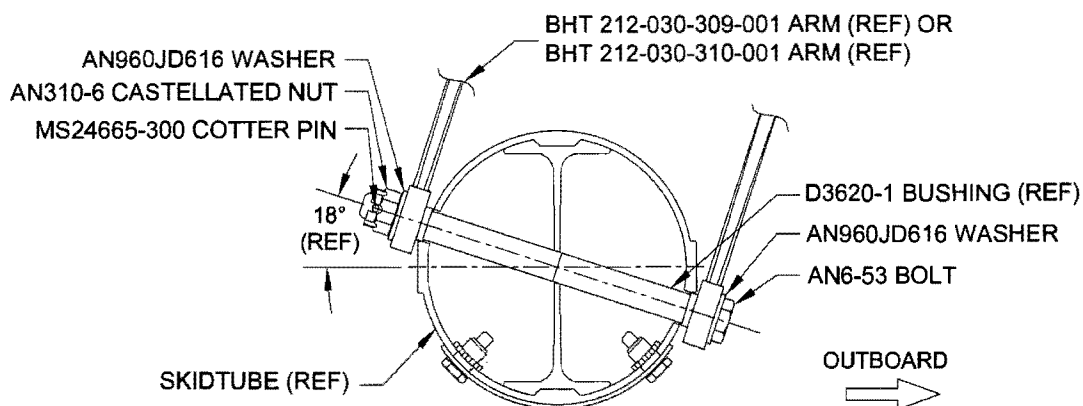


Section E-E – Doubler Installation

(See **Figure 4.1**; Approximately STA 111.9)

(LH Skidtube Installation Shown, RH Skidtube Installation Opposite)

- 4.2.3 Install the electric step arms to the skidtube as shown in **Section F-F**. Note that the step should be installed so that it is angled toward the outboard side of the skidtube as shown in **Section F-F**. Ensure all nuts are installed on the inboard side of the skidtube. It is acceptable to replace the AN6 bolts with longer or shorter AN6 bolts as required and/or install extra AN960JD616 washers under the nut to ensure proper installation of the cotter pin.



Section F-F – Electric Step Arm Installation

(See **Figure 4.1**; Approximately STA 100.4 and 130.0)

(LH Skidtube Installation Shown, RH Skidtube Installation Opposite)

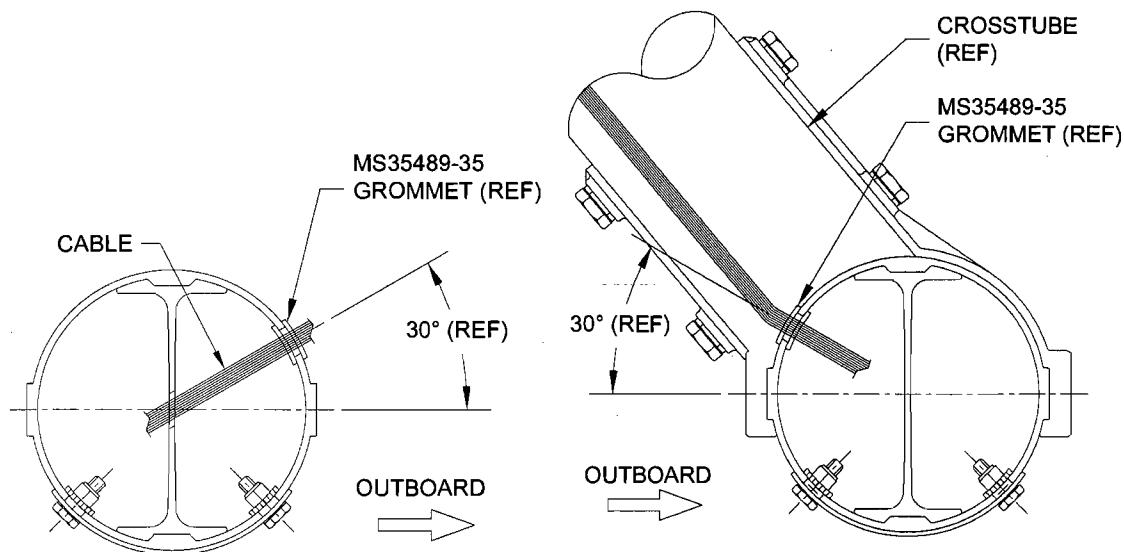
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Revision: **C**

Date: 08.04.23

- 4.2.4 Route the cabling from the step into the skidtube through the skidtube grommet at STA 114.8, through the I-beam web to the inboard side of the skidtube (refer to **Section G-G**), forward to the forward crosstube, out of the skidtube through the skidtube grommet at STA 71.5 and into the forward crosstube (refer to **Section H-H**).



Section G-G – Cable Routing Into Skidtube

(See **Figure 4.1**; Approximately STA 114.8)
(LH Skidtube Installation Shown, RH Skidtube
Installation Opposite)

Section H-H – Cable Routing Out of Skidtube

(See **Figure 4.1**; Approximately STA 71.5)
(LH Skidtube Installation Shown, RH Skidtube
Installation Opposite)

- 4.2.5 Complete the installation of the BHT Power Step Kit per the Aircraft Maintenance Manual.
- 4.2.6 Re-install the forward D2571/D2572 Saddles and D2594 Plugs onto the skidtube assembly, and re-install the skidtube assembly onto the aircraft per ICA-D205-634 (see **Figure 1.1** for the installed step).

DART SERVICE INSTRUCTION

TO AMEND INSTALLATION INSTRUCTIONS D412-673 REV. C

REF CANADIAN STC: SH96-88

REF FAA STC: SR00563NY

REF EASA STC: EASA.IM.R.S.01303

PURPOSE:

THE PURPOSE OF THIS SERVICE INSTRUCTION IS TO ADD 4X D4398-1 BUSHINGS TO THE D412-673-011 ELECTRIC STEP ADAPTATION KIT, TO ENSURE COMPATABILITY WITH THE OEM ELECTRIC STEP.

PARTS LIST CHANGE:

QTY. -011	PART NUMBER	DESCRIPTION
X	D412-673-011	Electric Step Adaptation Kit

4	D4398-1	Bushing
---	---------	---------

— ADD

PRELIMINARY ISSUE
ASS 11.05.04

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH
DAO # 01-O-01

APPROVED

BY: _____
D. SHEPHERD (DE # 02)

DATE: 11.05.03
CERT. NO.: SH96-88
ISSUE NO.: 3

A	NEW ISSUE	AJS	11.05.03
REV.	DESCRIPTION	BY	DATE
DESIGN	AJS	DART AEROSPACE LTD	
DRAWN	AJS	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>AP</i>	DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9556	SHEET 1 OF 2
APPROVED	<i>AP</i>	TITLE	SCALE
DE APPR.		BUSHING INSTALLATION	NTS
DATE	11.05.03	COPYRIGHT © 2011 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

MODIFICATION PROCEDURE:

IT IS ACCEPTABLE TO PRESS OUT THE QTY 4 BUSHINGS LOCATED IN THE STEP ARMS (PART No. BHT 212-030-309-001 ARM OR BHT 212-030-310-001 ARM). REPLACE THE OEM BUSHINGS WITH QTY 4 D4398-1 BUSHINGS. ENSURE THAT THE SHOULDER OF THE BUSHING IS FACING OUT AS SHOWN IN FIGURE 1. AT THE INSTALLER'S DISCRETION, THE D4398-1 BUSHING MAY BE INSTALLED USING LOCTITE 601 (OR EQUIVALENT TO MIL-R-46082) APPLIED TO ALL MATING SURFACES.

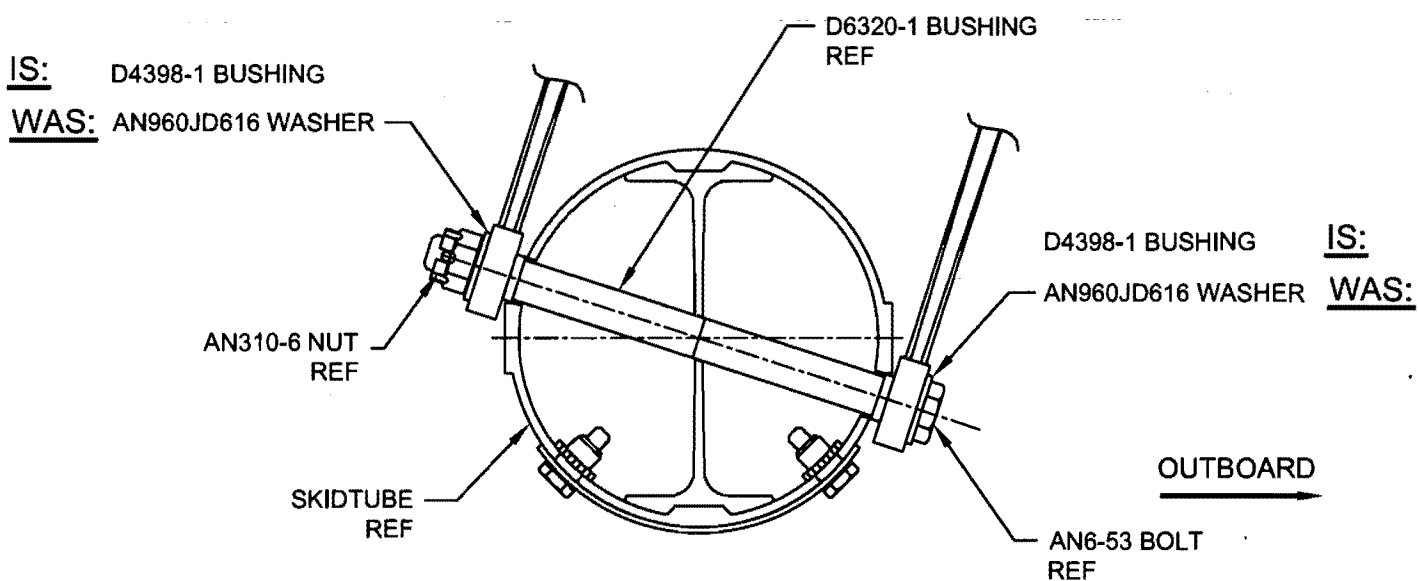


FIGURE 1: TYPICAL STEP INSTALLATION

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DESIGN	AJS	DART AEROSPACE LTD	
DRAWN	AJS	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>140</i>	DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9556	SHEET 2 OF 2
APPROVED	<i>140</i>	TITLE	SCALE
DE APPR.		BUSHING INSTALLATION	NTS
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ENGINEERING CHANGE NOTICE

DART AEROSPACE LTD

Date: 11.05.04	Job No.: ENG2108	ADR Yes/No: Y	ADR Date: 11.05.04	ECN #: 11- 563
Product No.: D205-673		Created By: AJS	Approved By: <i>[Signature]</i>	
Product Name: Electric Step Adaptation Kit		Checked By: <i>[Signature]</i>	General Manager Approval: N/A	

Distribution	Reqd	Resp	Initial / Date	Distribution	Reqd	Resp	Initial / Date
Production Manager / Coord.	LL/MF			DQA / QA Coord.			
Purchasing Coord.				QC Coordinator			
Production Engineering Coord.	JLM			Customer Technical Support	MB		
				Marketing	SW		
				Customer Order Processing			

Reason for Change: NEW PART

Documents Affected:
D4398 Rev. A

PARTS MUST COMPLY ☒ PREVIOUS PARTS SATISFACTORY ☐

#	Quality Assurance Actions	Reqd	Resp	Notes	Complete
1	Notify Previous Customers	N			
2	Notify Eurocopter France	N			
3					

#	Engineering Actions	Reqd	Resp	Notes	Complete
4	Required Documents/Drawings Under Review	N			
5	Update Master Document List (MDL)	Y	AJS	TO BE RELEASED ON ECN 11-564	
6	Update Product Compatibility Matrix	N			
7	Create Eurocopter Form (FEE)	N			
8	Notify TC / FAA of Change	N			
9					

#	Document Control Actions	Reqd	Resp	Notes	Complete
10	Move Electronic Files/Design Journal	Y	KJ		11.05.04 <i>[Signature]</i>
11	Update Product Specification Files	N			
12	Update Approved/Preliminary Dwg PDF Files	Y	KJ		11.05.04 <i>[Signature]</i>
13	Update Document Record (DR)	Y	KJ	Rev. 0	11.05.04 <i>[Signature]</i>
14	Update Product Development Summary	N			
15	Update QSI 021 and/or STC Approval List	N			
16	Update Parts / STC Database	N			
17	Update / Verify ARC Database	N			
18	Create / Update Change Record Form / Item Card Database	N			
19	Create / Update PPP's	N			
20	Red Decals required?	N			
21	Update Document Control Database / Laminated Dwgs	N			
22	Update Grey Project / Electronic Binder PDF Files	N			
23	Update D-Part/M-Drawing/DSI/DEO Master Binders	Y	KJ		11.05.04 <i>[Signature]</i>
24					

Description / Action:

Part may be shipped, parts will not be considered Airworthy until DSI 9556 is released on ECN-11-564. AJS 11.05.04

ECN Verified & Complete: _____ Date: _____

